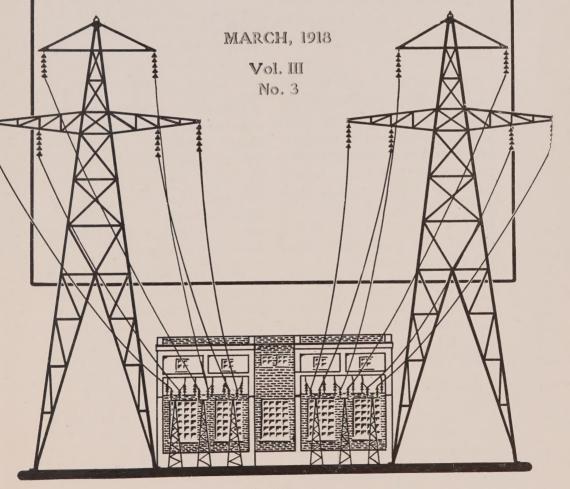


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EDITORIAL

Ontario Municipal Electrical Association

EVERY municipal manager in the Hydro system should make it a point to attend the meetings of the Ontario Municipal Electrical Association, which will be held in Toronto on March 13th and 14th.

These meetings will be the most important ever held by the Association—because at them will be discussed the reorganization of the Association along free, unhampered lines. A great deal of hard, conscientious work has been given to this subject by the committee and tentative reorganization plans have been developed.

If every representative gives a full examination to the draft which was mailed out some time ago and comes to the meeting fully prepared to discuss the projected reorganization, the meeting will have achieved its desired object.

On the other hand, if a perfunctory approval or a sketchy reading is given the draft, the meeting will be a more or less cut-and-dried affair—devoid of real, useful discussion.

This matter is of the greatest importance. Study the proposed plans carefully. Formulate YOUR OWN ideas on the subject. And come to the meeting prepared to advance ideas that are YOUR OWN—not to O.K. what somebody else thinks is proper.

These meetings are ones which need the active support of every municipal representative. Come without fail. The whole future of the organization depends upon YOUR ACTION.





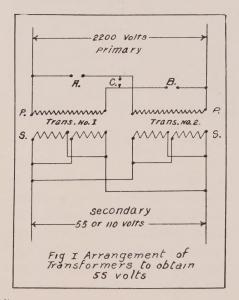
Thawing Water Pipes by Electricity

By H. D. ROTHWELL

THE difficulties which present themselves in the operation of water works in the Northern climates are many and not the least of these is the thawing of frozen service pipes to houses.

These are due to the prolonged cold weather, or because there is insufficient earth covering to protect the pipes. In many cases even the mains themselves will freeze, where the flow of water is inclined to be sluggish and thereby rendering part of the system ineffective for domestic use and crippling it entirely in case of fire.

The thawing of frozen water pipes by means of the electric current is quite simple, and undoubtedly the most effective of any of the methods in use to-day. Pipes up to 3 inches in diameter may be thawed in a few minutes by the passing of a heavy electric current at low voltage, through the pipes. In most cases, pipes will only be frozen for a few feet, that is, where they are exposed the most, and in cases like these, the time required is usually measured in seconds,



but where pipes are frozen for 15 or 20 feet, the time required is not usually over 8 minutes and practically no cases would be sufficiently long to effect the municipalities' 20 minute sustained peak. It will be interesting



Connecting the primary leads to the 2,200-volt circuit

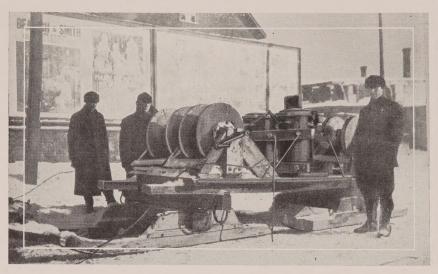
to note from the records of over 75 consecutive cases, where service pipes were frozen, that the maximum time required to thaw any one service was not over 5 minutes, and the majority would not be over 30 seconds. One case was noted, however, where the

current was left on for 20 minutes and on further examination, it was found that the valve on the street was closed. Thawing operations are not usually carried on past the point where the water begins to flow, as it was found cheaper to let the flowing water thaw the core of ice which remains in the pipe.

The apparatus required for thawing water pipes consists of two 15 K.V.A., 2200 volt 110 volt single phase, transformers, with the primary windings arranged in such a manner, so that they may be connected in series or parallel. This is accomplished by three primary cut-outs, as shown in figure one. By this arrangement it will be noted that if the two fuse plugs are inserted in position "A and B", the windings will be in parallel, or if one fuse plug is inserted in position "C" the windings will be in series. Fuse plugs are used instead of switches, owing to the fact that a short circuit could occur by closing the wrong combinations of switches.

The secondary windings of the transformers are connected permanently in parallel and by this arrangement, it is possible to get 55 volts or 110 volts, depending upon the arrangement of the primary windings, as to whether they are connected in series or in parallel.

The transformers which are mounted on the centre of a sleigh are clamped together by four cross-arms and six



A close view of the thawing outfit, showing details of the secondary reels, etc.

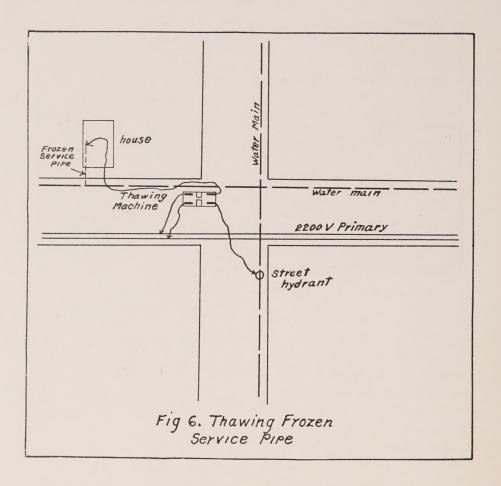
through bolts, as shown. The crossarms serve as a support for the cutout and also an ammeter, which is connected in the primary side, to indicate the current taken,

Four reels of wire are carried as a part of the outfit. The two mounted on the rear of the sleigh are No. 6 B. and S. gauge, stranded, double braid, rubber covered and are used for making connections to the 2200 volt primary. The two forward reels are bare, No. 210 extra flexible, copper cable. Primary reels carry about 800 feet on each, whereas the secondary reels contain about 250 feet on each.

The ends of the wires nearest the centre of the reels are brought out through a hole made in the side, and a suitable connector is soldered on, which facilitates the making of connections to both the primary and the

secondary transformers, after sufficient wire has been payed off to establish the necessary connections.

The usual method of thawing ordinary house service is to connect one of the secondary cables to the nearest street hydrant and to attach the other to the cold water tap on the service to be thawed. Having already connected the primary leads to the nearest 2200 volt circuit, all that remains to be done is to insert the fuse plug in position "C" and the thawing will commence immediately. By watching the ammeter, the operator can usually tell if sufficient current is flowing to complete the thawing. In a few cases, however, it will be necessary owing to the street hydrant being a great distance away, to use 110 volt, but such instances will not be many on the ordinary water works system.



Better be Safe than Sorry

By H. F. STRICKLAND

THE use of electric light and electric utilities in houses is, without doubt, the safest and most convenient form of illumination and service which can be obtained. Fires from electrical causes are, of course, given undue prominence owing to the fact that the use of electricity

is comparatively new as compared with the old forms of illumination, cooking and heating, which electricity is fast superseding. Consumers must not be alarmed when their attention is drawn to glaring accounts of deaths or fires from electric wires. It is true that there have been both, but this does not lessen the number of acci-

dents, fires and deaths which have been caused from gas and other forms of lighting, heating and cooking. Every year brings about its toll of terrible burns from exploding lamps, the lighting of ranges with coal oil, gasoline explosions, gas-suffocations and a host of fires from overheated stove pipes, hot coals and the like.

The chief cause of accident or fire from electricity is as a result of carelessness and ignorance and once the public becomes educated to the nature of electricity and the proper use of appliances, this danger will be reduced to the vanishing point.

The work of the Electrical Inspection Department is doing much to reduce this danger by insuring that the wiring and apparatus is at least properly installed at the time of final inspection, and it behooves all users of electric current to regard the suggestions of inspectors as being made by friends, not enemies.

During the past the market has been flooded with many unapproved devices which have been brought out in a hurry to meet the abnormal demand for heating and cooking, largely stimulated by the lack of ordinary fuel, and it is the Commission's intention through its Inspection Department to eliminate such devices as are improperly made or the manufacture of which is not properly supervised by the Inspection Department.

Many manufacturers who should know better have been in the habit of advertising that their devices may be attached to any key socket, in fact it has been a common thing to see the words "no wiring necessary, attach this to any of your lamp sockets." Such advertising is almost criminal, in fact we would go so far as to say that it is criminally negligent, as the people who boldly display such advertisements know perfectly well—or the nature of their business is such that they should realize—that this is a propaganda which breeds carelessness, and defeats the very object of proper inspection and education, and a thorough understanding of the nature of such devices.

Users of electrical appliances are therefore warned not to be misguided by advertisements of this kind. They should take it for granted that the installation of proper wiring and receptacles, either in the wall bases or the floors, in convenient locations, is the proper method to pursue. Lamp sockets on fixtures are intended and designed for the use of lamp bulbs and nothing else.

The use of portable heaters in bathrooms is also a very dangerous practice and should be discouraged, and by way of constructive suggestion we would point out that in many of our neighboring cities across the line and even in the western provinces, architects and builders are providing bathrooms with small electric grates which can be inserted in the wall of the bathroom without in any way changing the construction of the partition, and where the grate itself is not actually furnished the wires are of sufficient carrying capacity to take care of it when the house is finished. These grates, however, should be installed at the time the house is being built so that a proper installation is insured and the framework of the grate can be grounded. It is then perfectly safe. Builders and others are also strongly urged to provide services of ample capacity to take care of increases, especially owing to the increased use of heating devices.

In the city of Winnipeg no house over one storey in height is permitted to have a service of wires less than Number 10 gauge, but if the use of a heater or range is contemplated it is well to provide not less than Number 8 for a three-wire and Number 6 for a two-wire service, but where heaters are to be used the services should always be three-wire.

Preservation of Eyesight for Industrial Workers in War Time

THE National Committee for the Prevention of Blindness has issued a large poster which sums up striking truths in pithy language as follows:

BAD LIGHTING

may permanently injure the sights of workers; lessens efficiency and reduces the output; greatly increases the chances of accident.

GOOD LIGHTING

means sufficient light well distributed and without glare. Employers who do not provide good light are wasteful.

Workers who use poor lighting are reckless. The eyesight of industrial workers may be conserved or badly impaired by artificial light, depending upon its proper or improper application. Already laws regulating the artificial illumination of factories, and

requiring not only sufficient light, but a proper application of it have been enacted in New Jersey and Pennsylvania. Similar legislation is well un-



W. A. Hashal, formerly a member of the Hydraulic Department, who has been awarded the Military Medal at the Front

der way in New York and Ohio. The Illuminating Engineering Society has a Committee on Lighting Legislation working on the movement.



Conservation By A. G. LANG

ONSERVATION is the topic of the day. It is dawning upon us all that we have been most free and careless in the use of our resources. The World War and the necessities arising therefrom have been

required to bring home to us the immensity of the waste which has prevailed. May the lessons we are being forced to learn be not forgotten in the future when the danger of immediate want has passed.

Factory Lighting

A N article by C. E. Clewell in the February number of *Industrial Management* reviews the progress which has been made in the United States during the past few years in the matter of legislation regarding industrial lighting.

While, from the viewpoint of the manufacturer, the lighting of factories has a direct effect on production, both in the time saved in factory operations and in the accuracy of workmanship, the purpose of legislation is to protect the eyesight of the workman and to lessen the danger of accidents caused directly or indirectly by inadequate illumination.

In Wisconsin, New York, Pennsyl-

vania and New Jersey, legislation on this subject has been passed, but for the most part the rules have not been sufficiently definite to permit of being rigidly enforced.

In framing such legislation, two difficulties have been encountered. There has been a lack of general understanding of the exact requirements of factory lighting and there has been a lack of information of the best manner in which to make up the specifications.

The Illuminating Engineering Society has drawn up a code, which is reprinted below, and which will no doubt be used as a basis for proposed legislation.

CODE OF LIGHTING FACTORIES, MILLS AND OTHER WORK PLACES

Rule 1—General Requirement

Working or traversed spaces in buildings or grounds shall be supplied during the time of use, with artificial light in accordance with the following rules, when natural light is less than the intensities specified in Rule 2.

Rule 2-Intensity Required

The desirable illumination to be provided and the minimum to be maintained are given in the following table:

Rule 3-Shading of Lamps

Lamps shall be suitably shaded to minimize glare.

Note.—Glare, either from lamps or from unduly bright reflecting surfaces, produces eye-strain and increases accident hazard.

Rule 4—Distribution of Light on Work

Lamps shall be so installed in regard to height, spacing, reflectors or other accessories, as to secure a good distribution of light on the work, avoiding objectionable shadows and sharp contrasts of intensity.

			andles at the Practice	
Α.	Roadways and yard thoroughfares	0.05	0.25	0.02
В.	Storage spaces	0.50	1.00	0.25
C.	Stairways, passageways, aisles	0.75	2.00	0.25
D.	Rough manufacturing such as rough machining, rough assembling, rough bench work	2.00	4.00	1.25
	Rough manufacturing involving closer discrimination of detail	3.00	6.00	2.00
	Fine manufacturing such as fine lathe work pattern and tool making, light colored textiles	4.00	8.00	3.00
G.	Special cases of fine work, such as watch making,			
	engraving, drafting, dark colored textiles.	10.00	15.00	5.00
H.	Office work such as accounting, typewriting, etc	4.00	8.00	3.00

Note.—(a) The foot-candle, the common unit of illumination, is the lighting effect produced upon an object by a standard candle at a distance of one foot; at two feet, the effect would be not one-half foot-candle, but one-fourth foot-candle, etc. A lamp which would give off 16 candlepower uniformly in all directions would produce a uniform illumination of one foot-candle at a distance of four feet in any direction. (b) Measurements of illumination are to be made at the work with a properly standardized portable photometer.

Rule 5—Emergency Lighting

Emergency lamps shall be provided in all work space, aisles, stairways, passageways and exits to provide for reliable operation when, through accident or other cause, the regular lighting is extinguished. Such lamps shall be in operation concurrently with the regular lighting and independent thereof.

Rule 6—Switching and Controlling Apparatus

Switching or controlling apparatus shall be so placed that at least pilot or night lights may be turned on at the main points of entrance.

Chicago Waterworks System

THE discovery has been made in Chicago that out of every one hundred gallons of water pumped and sterilized by the Waterworks System only forty gallons have been put to good use, and the remaining sixty gallons have been wasted.

If this waste were eliminated, there would be a saving annually of one hundred tons of coal; extensions which are now being made at the rate of \$3,500,000 per year would be rendered unnecessary and the present plant would be sufficient to take care of the normal growth of the system for thirty-three years.

The report of the Chicago Bureau of Public Efficiency points out that in 1916 there was pumped an average of two-hundred and fifty-nine gallons per person per day and that while part of the sixty per cent. wastage is caused by leaks in mains and service pipes, the greater part is due to leakage on consumers' premises and to wilful waste.

The remedy recommended is to meter all consumers and it is estimated that the saving affected thereby would amount to not less than \$4,000,000 per year.

It behooves other municipalities to look into this matter. It is not likely that all the wasters live in Chicago.

Generation and Transmission in Great Britain

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Concerning the supply of electrical energy in Great Britain, a report has been issued by the Coal Conservation Sub-Committee of the Reconstruction Committee, Ministry of Reconstruction, which lays emphasis on the in-

efficiency of the large number of existing small generating plants and recommends that the latter be superseded by a small number of "super-power stations."

Great Britain lacks natural gas, oil and water power and is dependent almost entirely upon coal as a source of energy.

There are some six-hundred private and municipal electric supply companies and in these the average capacity of generating station, is about 5,000 horsepower.

In the greater London district, with seventy generating stations, there are found ten different frequencies, thirty-two different voltages of generation and twenty-four different voltages of distribution, it would appear that there were certain restrictions in the choice of frequencies and voltages but in the matter of rates, one hundred per cent. variety was obtained according to the report which states that there are seventy different systems of rates for charging the consumer.

It is now proposed to appoint a Board of Electricity Commissioners with full powers to deal with the electricity supply situation throughout the whole country; to draw up a comprehensive scheme dividing Great Britain into sixteen districts, in each of which there would be constructed large power plants with generating machines of from 20,000 to 50,000 horse-power capacity; to supply from these plants, through comprehensive distribution systems, electric energy at the lowest possible cost to meet the existing demands and those created by new processes and manufactures which are to be encouraged.

(Continued on page 74)

Important Notice

Engineer's Section — Ontario Municipal Electrical Association

THE next semi-annual meeting will be held in Toronto on March 13 and 14, 1918.

The Executive Committee has long felt that proper advancement was not being made and that certain hampering restrictions have militated against the attainment of the objects of the organization, as well as effectually damping the full support which would otherwise have been forthcoming from the municipal electrical managers, superintendents and engineers.

This matter has received earnest study from your Executive and its discussions have finally crystallized in the firm belief that only by a complete reorganization on a basis entirely free from entanglements and financially independent, can healthy growth and development come.

Reorganization plans have been developed tentatively by the Executive and these have now been compiled in form suitable for submission to the membership at

large, and copies of the suggested constitution and bylaws have already been forwarded to all interested parties.

The Executive earnestly requests that full study be given to this draft and that a representative be present from each municipality, fully prepared to discuss the entire matter. Do not look upon this draft as a cut-and-dried affair submitted for a merely formal approval, but as something in which you, personally, are vitally interested, and concerning which your opinion is of real worth and will be correspondingly valued. The Executive can only initiate the plan and it is for you to decide by the weight of your opinion, whether our organization is going to lapse into innocuous desuetude, or to cast aside old relationships and embark on an independent, active and successful career.

This matter is of such supreme importance that the Executive has considered it advisable to omit any program at this meeting, so as to devote the entire available time to the perfecting of the plan and the election of officers.

Municipal Commissions are strongly urged to encourage the active participation in the work of the Association by their operating officers.

Don't fail to come and bring plenty of enthusiasm, for on this meeting depends the whole future of the organization.

THE COMMITTEE.

(Continued From Page 71)

Among other advantages it is estimated that the proposed scheme will produce three times the present amount of power from the present coal consumption.

Concrete Poles for 22,000 Volt Line

Reinforced concrete poles are used in a line six miles long at Brentwood, California. This line supplied a load of approximately 2,800 horse-power. The poles are forty-one feet long, seventeen inches square at the base and eight inches square at the top. The cross arms were cast as an integral part of the pole. The spans used, vary from two hundred and fifty feet to three hundred and ninety feet.

Commenting on this installation, the *Electrical World*, February 9, 1918, states:—

"In this case, the permanency of the installation, with perhaps somewhat greater security against line trouble, was the deciding factor in the choice of reinforced concrete. The poles were designed as square, tapered beams, reinforced symmetrically on two sides. For economy of material, two sizes of poles were designed, the heavier ones to be used at each substation and for every fifth pole on the line as well as at crossings. The lighter poles served for the remainder of the work.

A striking feature of the construction is that the cross-arms were molded with the poles and the whole work of molding was done on the ground on account of the great weight of the finished pole, averaging about four tons. The forms were laid out horizontally, reinforcement was suspended

in place, and the concrete was handmixed and molded into them. In the cross arms the reinforcing is of steel angle irons, which carry the insulator pins directly so that even were the concrete to be broken from the arms the stability of the conducting system would not be disturbed. After completion, the poles were erected by a double derrick mounted on a dray. The derrick was put in position, the pole caught just above its center of gravity by a chain sling and the pole lifted on end and dropped into its hole. The average cost per pole erected was a little less than \$70 divided with fair equality between material and labor. The poles were designed with a high factor of safety, in fact so as to withstand a 00-mile (144.8-km.) wind with all the wires on one side broken, a condition thought considerably more severe than is likely to be actually encountered in the operation of the system. It is safe to say that so far as the strength and stability of the poles go, that particular line will be immune from trouble due to wind and weather for a long time to come.

In Time of War Prepare for Peace

E. WYNNE in the *Electric Journal* of January 1918, in an article entitled "Electrification of Railroads as a War Measure," points out the economies resulting from the use of electricity in transportation. The saving of coal is particularly attractive at the present time.

"Electric operation lends itself to fuel conservation in two ways; either water power is substituted for steam power, or the necessary steam power is produced in a central power plant more economically than by burning fuel on locomotives. In the first case, all of the fuel used for train propulsion, fuel handling and haulage, (which may be as high as ten per cent. of the propulsion fuel), water pumping, etc., is saved for other purposes. In the second case, approximately one-half of the fuel is conserved, it being a well established fact that one pound of coal burned in a modern electric power house will produce as much transportation as two pounds burned in steam locomotives."

The article quotes from the "Bulletin of National City Bank of New York," on "Economic Conditions" as follows:

"There is naturally a feeling of uncertainty and apprehension as to industrial conditions after the war. The demand for war materials will fall off, the supply of labor on the market will be greatly increased, and it is a question whether all this labor can be promptly placed in employment. It will be the most stupendous reorganization of industry ever known, and it is going to be a great social problem to accomplish this change without confusion, loss of confidence and a period of stagnation. It is important that plans be laid on a large scale to take up the slack, and other countries are laying them. In this country, ready at hand, is the task of equipping the railroads, and other industries, where practicable, to operate by electric power. . . , . The amount of work in sight if a general scheme of electrification was undertaken, would be sufficient to relieve the business community of its fears as to idleness and poor trade for some years to come, and would thus encourage other enterprises to go ahead.

"The danger will be in a pervasive feeling of uncertainty, causing men to wait with their own plans until they can discern the general trend, and waiting of itself slows down business. Large plans for the employment of labor which can be brought definitely forward at the critical time will serve to inspire confidence and support the whole situation."

Smoke and Conservation

THE Electrical Review's editor, in the issue of January 12th, comments in part on the above subject as follows:

"We all look to the day of universal electric heating when coal does not come to the city, but only its energy in the form of electricity. But that time is not yet. We even look to the time, perhaps closer, than many think, when gas is used for heat and coal for the thousand and more products that with the limited knowledge of to-day it represents. But the time for even this is not vet here. The time is now. however, when the centralized heating plant should come into its own of efficient, economical and smokeless utilization of coal for heat and electricity. For the present this is the simplest solution toward the mitigation of the smoke nuisance in many of our cities and congested districts; and also a radical and effective move toward the conservation of coal.

There was a time when a smoking stack was a source of pride, indicative of industry and commercial activity. But times are changing. To-day smoke is no longer a cause of pride, but of regret. It is no longer a credit to industry but a reflection on an unpatriotic and unbusinesslike act.

Who's Who in Hydro?

R. SIFTON, the chief engineer and general manager of the Hamilton Hydro-Electric System, was born in London Township, September 8, 1874.

He attended London High Schools and Forest City Business College, London, until 1892. From 1892 to 1896 he was a student at the School of Practical Science, Toronto, in the



E. I. Sifton

Mechanical Electrical Branch, receiving a special certificate in Electrical Engineering from the Faculty of Applied Science, Toronto University.

In 1897 Mr. Sifton became connected with the Electrical Construction Company of London, Limited, as designer, and from 1898 until 1908 filled

the duties of chief engineer and general manager of this company, which specialized on the construction and equipment of electric light and power plants.

From 1909 to 1910, he was engaged by the City of London and started the Hydro-Electric System for that city. From 1910 to 1914, Mr. Sifton acted as an independent consulting and constructing engineer, undertaking work for many municipalities.

Chief among these undertakings was the reporting on the Hamilton situation in 1911. This was followed by the designing and construction of the Hamilton Hydro-Electric System, including a joint underground conduit system, comprising all the telegraph, telephone, power and lighting distributing systems on over seven miles of the main streets of Hamilton.

From July 1914 to the present time, Mr. Sifton has been retained as chief engineer and general manager of the Hamilton Hydro-Electric System.

Cirls for Meter Readers

The Binghamton Light, Heat and Power Company, of Binghamton, New York, has employed girls to read meters and deliver bills. It has been found advisable to do this on account of the general labor condition and it is in line with the policy adopted about six months ago where it is feasible to do so, thereby releasing as many men as possible for Federal service.—

Electrical Review.

Iron and Steel in Canada—

In the Canadian Chemical Journal for February we note data obtained from the Mines Branch of the Department of Mines, Ottawa, giving information regarding the steel produced in Canada. Of particular interest to us are the figures showing the growth in pig iron and steel produced in electric furnaces for the first nine months in 1917. Nine thousand, nine hundred and eighty-three short tons of pig iron was produced in electric furnaces from scrap steel at plants located in Orillia, Collingwood, St. Catharines, Toronto and Montreal.

The production of steel by electric furnaces was said to have been thirty thousand, nine hundred and sixty tons during the first nine months of 1917 as against a total of sixteen thousand, six hundred and thirty-nine tons produced during the entire year of 1916. During September 1917, the production of electric steel was over five thousand tons or at the rate of over sixty thousand tons per annum.

Betrayed

The other night
I went to the theatre,
With a low-brow friend,
And the orchestra played
"The Little Brown Jug."
And he thought
It was the national anthem

And stood up, And I did too, Darn Him!

E. H. Porte

E. H. Porte, formerly in charge of the Commission's Sales and Advertising, resigned February 18th, to become general manager of the Renfrew Electric Manufacturing Company, Ltd., Renfrew, Ontario, makers of the "Canadian Beauty" appliances.



E. H. Porte

The staff of the Commission and his numerous other friends throughout the Hydro System, extend their heartiest wishes for his success in this new venture.

Mr. Porte was with the Commission for almost seven years.

HYDRO NEWS ITEMS

Niagara System

General — Owing to the power shortage on the Niagara System the companies and municipalities being supplied from this system have been restricted in the amount of power which they are allowed to use. The maximum amount of power allowed was fixed at the peak load up to December 10, 1917. Since, however, these restrictions were made the Commission have found it necessary to further reduce the amount of power allowed to the various companies and municipalities in this district by an additional 25 per cent.

This restriction has been a very severe handicap to the municipalities on the Niagara System, but the power customers in these municipalities have in practically every case shown their willingness to co-operate with the municipality in assisting to reduce the municipality's peak load in order to conserve power on the Niagara System to supply industries working on war munitions.

A large number of municipalities in the Niagara District have requested the Commission to supply large blocks of power to various industries. As yet, however, the Commission is not in a position to make any definite promises as regards the power supply. It is expected, however, that with the two machines of the Canadian-Niagara Power Company which were damaged some time ago, and have since been repaired, connected on to the Com-

mission's system, these additional units will assist considerably in supplying the urgent demands of the municipalities in the Niagara District for power at this time.

Owing to the great scarcity of power in the Niagara District no further extensions to the system are being considered by the Commission, except such extensions for which arrangements have already been made and considerable money spent, making it necessary to continue the extensions to the point where they are revenue producing.

Etobicoke Township—The Hydro-Electric enabling by-law and a money by-law for \$36,000 were submitted to the ratepayers in a definitely defined district in the township, and both of these by-laws were carried by large majorities. The money by-law is to provide funds to pay for the Interurban Electric Company's lines, which were purchased in this township, as well as covering the cost of extending and remodelling these lines. The Township Council has forwarded resolutions to the Commission requesting that the township system be taken over and operated by the township at once.

Stamford Township — Arrangements are being made by the Stamford Township Council to sell \$30,000 in debentures, to pay for the township distribution system, which the Commission purchased from the Ontario

Distributing Company on behalf of the township. The Commission has been operating this system for the township since it was purchased, but the township proposes to reimburse the Commission for the cost of the system, and to take over its operation from the first of the year.

Thorold—The Hydro-Electric enabling by-law was submitted to the ratepayers of the Municipality of Thorold at the January elections, and this by-law was carried by large majorities. This municipality at present owns its own distribution system and is purchasing power from Mr. James Battle, who has a contract with the Ontario Power Company to supply customers in and around the Town of Thorold.

Central Ontario System

Bowmanville—A. Creelman, local manager, has resigned and is succeeded by G. E. Chase, formerly local manager at Brighton.

Brighton—Royal Quick has been appointed as local manager following G. E. Chase, who has been transferred to Bowmanville.

Omemee—The village is now being served by Hydro power. The tannery has been disposed of to outside interests who contemplate extending the plant.

Kingston—The Civic Utilities has recently purchased for the Kingston Street Railway Company, a 450-horsepower synchronous motor from the Sarnia Street Railway Company. This machine will be connected to a 300-kilowatt railway generator in order that the railway may be operated by Hydro power.

The 350-horsepower synchronous motor purchased by the Civic Utilities for waterworks pumping purposes, has been shipped and will be installed immediately.

The Civic Utilities proposes extending its lines to serve the Kingston Penetentiary and Hospital for the Insane. It also contemplates building lines to serve the Kingston Locomotive Works and the Kingston Military College.

The Civic Utilities has leased a store on Princess street and has moved its business offices up town. All bills are now payable at this office instead of the City Hall as formerly.

The New Business Department also has offices and display rooms in this building, and the new arrangement is much more satisfactory than formerly.

Severn System

Alliston—The reconstruction of the distribution system which is being performed by the Hydro-Electric Power Commission for the municipality, is progressing favorably and it is expected that the work will be completed shortly and power supplied to the town from the transmission lines of the Severn System.

The Commission has been requested to advise the municipality as to the installation of electric motor-driven pumps and a report has been submitted to the town council covering a complete installation for a new pumping plant.

Collingwood—The extension to the sub-station and installation of equipment in same, has been completed. This station is now thoroughly equipped for paralleling the Eugenia System with the Severn System and forms the junction point between the transmission line of the two systems.

The Hydro-Electric Power Commission has also completed the installation of a 300-K.V.A. synchronous condenser for the local commission and very satisfactory results are being obtained from this unit in correcting the power factor of the local load.

Cookstown — Construction work has been started on the Cookstown distribution system and it is expected that power will be delivered to the municipality within a short time from the transmission lines of the Severn System.

Midland—Resolutions have been received from the local commission in Midland authorizing the Hydro-Electric Power Commission to proceed at once with the construction of a 22,000-volt feeder from the local sub-station to the Midland Shipbuilding Company's plant.

These resolutions also authorize the Commission to purchase all equipment and perform all construction work in connection with an outdoor type sub-station for supplying the shipbuilding company with power.

This station will consist of three 300-K.V.A. transformers, with the necessary metering and protective equipment.

In order to take care of this additional load, the local sub-station is being extended and enlarged and this

extension when completed, will permit the installation of an additional bank of transformers and an additional local 22,000-volt feeder.

Construction work will begin at once and it is expected that the new line and sub-station will be in operation some time during the month of April.

The work in connection with installing a 300-K.V.A. synchronous condenser at the Midland station is progressing favorably and it is expected that this municipality will be thoroughly equipped with the necessary equipment for power-factor correction within a short time.

The entire installation is being taken care of by the Hydro-Electric Power Commission both in respect to engineering and construction work.

Eugenia System

Durham—The installation of the I,000-K.V.A. frequency changer set in the plant of the National Portland Cement Company has been completed and the Commission is now ready to serve the company with power from the transmission lines of the Eugenia System.

Elmwood—The distribution system in the Village of Elmwood is practically completed and it is expected that this municipality will be receiving Hydro power by the time that this information reaches the press.

Eugenia Power House—The construction work in connection with the extension of the Eugenia power house is progressing favorably and it is expected that the new 4,000-horse-power

unit which is being installed, will be ready for operation in about two months' time.

Neustadt—The Village of Neustadt will vote on money and enabling by-laws in connection with taking Hydro power on March 14th.

This municipality is already being served with power by the Hydro-Electric Power Commission over a six-mile, 4,000-volt transmission line feeding out of the Hanover sub-station.

If the by-laws carry, the local distribution system will be purchased from the Commission and completely rebuilt.

Tara—Power was delivered to the municipality of Tara from the transmission lines of the Eugenia System on January 3rd and the distribution system in this municipality made alive for the first time on that date.

About seventy services are already connected to the Tara system and provision is being made for serving a large power customer.

This municipality is receiving power from an outdoor pole type station located at Kilsyth and delivered to Tara over a 4,000-volt transmission line approximately seven miles in length.

Rideau System

General—The Commission is contemplating the purchase of High Falls on the Mississippi and erecting a generating station for serving the Rideau System.

Carleton Place—The Municipal

Council has requested the Commission to make a valuation of the local private plant, with the idea of purchasing same and securing a supply of power from the Commission.

Smith's Falls—Work will be started in the near future on the substation, which will supply Smith's Falls with power purchased from the Rideau Power Company at Merrick-ville.

The transformer for the generating station at Merrickville has been shipped and will be installed immediately.

Work on the Merrickville-Smith's Falls transmission line is progressing favorably and it is expected that the line will be completed by the end of March.

Perth—The town contemplates remodelling their street lighting and distributing system this Spring, and will change over from 133 to 60 cycles. Tests have been made on the principal manufacturing plants in order to secure the necessary data for changing over from steam to electrical operation.

St. Lawrence System

General—The design of the Cornwall 110,000-volt station which will supply the St. Lawrence System with power, has been completed and the designs have been approved by the engineers of the Cedar Rapids Transmission Company.

Work will be started on the Cornwall-Morrisburg 44,000-volt line as soon as the weather is favorable in the Spring.

Brockville—Tests are being made on some of the large manufacturing plants in Brockville in order that the data may be available for changing same over to Electric Drive as soon as Hydro power is available in sufficient quantity from Cedar Rapids.

The Brockville Commission contemplate the installation of additional switchboards and switching equipment in order to handle additional load which will be taken on in the Spring.

Nipissing System

General—The Commission has under advisement the installation of a storage dam at Cox Chute on the South River, in order to conserve water and eliminate the necessity of using the steam plant in North Bay.

North Bay—The Commission has purchased a 150-kilowatt, 3-phase generator from the town of Dunnville to replace the machine recently burned at the North Bay steam plant.

The Commission expects to cut 1,000 cords of wood from the limits in the vicinity of Trout Creek, to help out on the fuel shortage.

Ottawa System

Ottawa—The Ottawa Hydro-Electric Commission has applied to the Commission for a third follow-up rate for domestic lighting.

The Story of Appliances

THE story is told that a bright mechanical engineer, engaged one day in repairing the propeller wheel of a steamship, conceived in the incident the inspiration which led to the invention of the electric fan. The accident, if such it was indeed, constructed a very old device into a new form. For fans are as old as history. A bas-relief still extant shows Seenacherib, the Assvrian monarch in the Seventh Century, B.C., attended by fan bearers. There are other monumental examples of the same class from Thebes and from Persepolis, destroyed by Alexander three hundred years before our era. Descend to more modern times and the literature of the fan opens a wide long scroll not free of connection with many stirring events.

This is a far cry from the modern electric fan, it would seem, but it's worth héeding, because modern salesmanship takes note of an immense range of facts if their recital interests a prospective customer. Electrical appliances in their beauty of design and finish, in the combination of art and utility which they invariably illustrate, supply in themselves a start for the customer's interest. The live salesman can increase that by drawing on the store of facts involved in each.

THE Commission has just published a four - page leaflet containing Amendments to the fourth edition of H. E. P. C. "Rules and Regulations for Inside Electrical Installations," approved by Order-in-Council, Nov. 27, 1917.

This publication should be in the hands of every contractor in Ontario as well as every municipal manager, and those who have not yet obtained a copy are requested to write the Commission at once.

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HYDRO MUNICIPALITIES

NIAGARA SYSTE	M	Por	Pon
	TAT		Chesley 1 075
25 Cycles		Springfield. 4	12 Dundalk
	Pop. 1,735	St. Catharines	
Acton		St. George	no Elmwood 500
Ailsa Craig		St. Jacobs	Flesherton 428
Ayr	800	St. Mary's	68 Grand Valley 644
Baden.	710	St. Thomas	
Beachville		Stamford Township 3,4 Stratford 17,00	8 Holstein 285 31 Horning's Mills 350
Blenheim		Strathroy	
Bolton	727	Streetsville 5:	Mount Forest 1.941
Bothwell	703	Tavistock 1,00 Thamesford 50 Thamesville 70	9 Orangeville 2,493
Brampton	4,041	Thamesford	11,910 Owen Sound
Brantford	25,420	Thamesville	9 01161041116 1,113
Breslau	500	I horndale	0 Tara 590
Brigden	400	Tilbury 1,74	
Burtord Burgessville Caledonia	700	Tillsonburg	10001 50,077
Burgessville.	300	Toronto 463,77 Toronto Township 4,87 Vauhan Township 4,18	5 OTTAWA SYSTEM
Chatham	1,217 12,863	Vaughan Township 4.18	7 60 Cycles
Clinton	2,177		Ottawa 100 163
Comber	800	Wallaceburg 4,10	
Dashwood	350	Waterdown 78	
Delaware	350		60 Cycles
Dorchester.	400	Waterloo Township 6,69	
Dresden	1,521	Waterloo 4,93 Waterloo Township 6,69 Watford 1,22 Watland 7,22	
Drumbo	400	Welland 7.24	3 MUSKOKA SYSTEM
Dublin	4,652	West Lorne 72	1
Dundas	870	Wellesley	3 60 Cycles
Elmira	2,270	Wasters 21	6 Gravenhurst 1 702
Elora	1,115	Windsor 24,10	2 Huntsville 2,395
EmbroEtobicoke Township	483	Woodbridge 63	9
Etobicoke Township	5,711	Woodstock	4 Total 4,097
Exeter	1,5/2	Wyoming	CENTRAL ONTARIO SYSTEM
Fergus	1,776	Zurich48	
Forest	1,495	Total 993,86	2 Belleville 12.277
Galt	1,905		Bowmanville 3,655
Goderich	4,655	SEVERN SYSTEM	Brighton 1,337
Georgetown	3.271	60 Cycles	Cohoura A 712
Granton	300	Barrie 6,45	Colborne 1.012
Guelph	16,735	Coldwater 57	Deseronto 2.221
Hagersville	1,105	Coldwater 57 Collingwood 6,36	Kingston 21,325
Hamilton	100,461	Creemore	- Lindsay /.481
Farriston	1,404 749	Elmvale 77	5 Millionale
HensallHespeler	2,740	Midland	
Highgote	500	Orillia 1,44	O Non-based
Highgate Ingersoll Kitchener	5.176	Penetang 3,92 Port McNichol 50	Newcastle 611
Kitchener	19,266	Port McNichol	Omemee 482
Lambeth	350	Stayner 97 Victoria Harbor 1,47	² Orono
Listowel	2,326	Waubaushene 60	Oshawa 8.240
London.	58,055	Wadbausherie	FELEI DOI O
Lucan	662	Total 35,93	Port Hope 4,649
Lynden	2,072		Stirling 732 Trenton 5,000
MiltonMilverton	893	WASDELL'S SYSTEM	1 weed 1.364
Mimico	1,976	60 Cycles	Whitehar 2 964
Mitchell	1.687	Beaverton 1,01	
Mount Brydges	500	Brechin 21 Cannington 90	Total 104,514
New Hamburg	1,543	Sunderland 57	
Mount Brydges. New Hamburg. New Toronto.	1,186	Woodville 38	8 MILIOSING SISIEM
Nigogra Palls	11,147		_ 60 Cycles
Norwich	1,189	Total 3,09	1 Callander 650
Ottonville	500	OF LAWDENCE SVOTEM	Nipissing 400
OttervillePalmerston	1,843	ST. LAWRENCE SYSTEM	North Bay
Dorie	4,370	60 Cycles	
Petrolia	3.891	Brockville 9,42 Chesterville 85	
Plattsville	550	Chesterville 85 Prescott 2,74	
Petrolia Plattsville Point Edward	899	Williamsburg 10	RIDEAU SYSTEM
Port Credit Port Dalhousie Port Stanley	1,046	Winchester 1,06	
Port Dalhousie	1,318		
Port Stanley	4,643	Total 14,18	7 Almonte 2,660 Carleton Place 3,850
Preston	600		Kemptville 1 130
Ridgetown	2,326	EUGENIA SYSTEM	Lanark 716
Data	650	60 Cycles	Merrickville906
KOCKWOOD			n Perth
Rockwood	655		U FCI LIL 17-11
Rodney	655 3,077	Artemesia Township	Smith's Falls 0.021
Rodney	655 3,077 11,676 1,964		Smith's Palls

